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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In application of: Masumi Sakai

Attorney Docket No.: SMDZP106

Application No.: 09/779,125

Examiner: A.C. Lavarias

Filed: February 7, 2001

Group: 2872

Title: FURNACE-TYPE ATOMIC ABSORPTION
SPECTROPHOTOMETER

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as first-class mail on October 21, 2004 in an envelope addressed to the Commissioner for Patents, Mail Stop Appeal Brief-Patents, P.O. Box 1450 Alexandria, VA 22313-1450.

Signed:

Deborah Neill

**APPEAL BRIEF TRANSMITTAL
(37 CFR 192)**

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This brief is in furtherance of the Notice of Appeal filed in this case on September 29, 2004. This brief is transmitted in triplicate.

This application is on behalf of

☐

Small Entity

☒

Large Entity

Pursuant to 37 CFR 1.17(f), the fee for filing the Appeal Brief is:

☐

\$170.00 (Small Entity)

☒

\$340.00 (Large Entity)

☐

Applicant(s) hereby petition for a _____ extension(s) of time to under 37 CFR 1.136.

If an additional extension of time is required, please consider this a petition therefor.

☐

\$ An extension for _____ months has already been secured and the fee paid therefor of _____ is deducted from the total fee due for the total months of extension now requested.

☒

Applicant(s) believe that no (additional) Extension of Time is required; however, if it is determined that such an extension is required, Applicant(s) hereby petition that such an

extension be granted and authorize the Commissioner to charge the required fees for an Extension of Time under 37 CFR 1.136 to Deposit Account No. 500388.

Total Fee Due:


Appeal Brief fee	\$340
Extension Fee (if any)	\$ NA

Total Fee Due: \$340

☒ Enclosed is Check No. 9807 in the amount of \$340.

☒ Charge any additional fees or credit any overpayment to Deposit Account No. 500388, (Order No. SMDZP106). Two copies of this transmittal are enclosed.

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP


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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Deborah Neill

APPELLANTS' BRIEF PURSUANT TO 37 CFR 1.192

Sir:

This brief, transmitted herewith in triplicate, is in furtherance of the Notice of Appeal mailed in the above-referenced application on September 29, 2004. The fees required under 37 C.F.R. 1.17(f) and any other fees required for filing are enclosed.

This brief contains pursuant to 37 C.F.R. 1.192(c) the items under the following headings and in the order set forth below:

- I Real Party in Interest
- II Related Appeals and Interferences
- III Status of Claims
- IV Status of Amendments
- V Summary of Invention
- VI Issues
- VII Grouping of Claims
- VIII Arguments
- IX Appendix of Claims Involved in the Appeal

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I. Real Party in Interest

The real party in interest of this application and of this appeal is:

Shimadzu Corporation, which is a Japanese corporation doing business at 1 Nishinokyo-Kuwabaracho, Nakagyo-ku, Kyoto 604, Japan and is the assignee in entire rights to this application.

II. Related Appeals and Interferences

There are no other appeals or interferences known to appellant, the appellant's legal representative, or assignee which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status of Claims

This application was filed with eleven (11) claims of which one (1) was an independent claim (claim 1).

Claims 1-11 were rejected in an office action dated October 4, 2002. In applicant's response (Amendment "A") mailed January 22, 2003, claims 1-7 were amended and new claims 12-17 were added of which one (1) was an independent claim (claim 12).

Claims 1-17 were rejected in a final office action dated March 6, 2003. In a response (Preliminary Amendment "B") mailed September 3, 2003 together with a Request for Continued Examination, no claims were amended.

In a subsequently submitted document (Preliminary Amendment "C") mailed October 29, 2003, claims 1, 12, 13 and 17 were amended.

Claims 1-17 were rejected in a final office action dated November 10, 2003. In response (Amendment "D") mailed February 9, 2004, claims 1-11, 14 and 17 were canceled and claims 12 and 15 were amended.

Claims 12, 13, 15 and 16 were rejected in an office action dated March 4, 2004 in which the finality of the action dated November 10, 2003 was removed. In response (Amendment "E") filed June 3, 2004, claim 12 was amended.

Claims 12, 13, 15 and 16 were rejected in a final office action dated August 13, 2004.

Notice of Appeal was mailed on September 29, 2004.

The status of the claims as set in said final action dated August 13, 2004 was and is as follows:

allowed claims	---	none
claims objected to	---	none
cancelled and withdrawn claims	---	1-11, 14 and 17
claims rejected	---	12, 13, 15 and 16

IV. Status of Amendments

Claim 12 has been amended. Claims 13, 15 and 16 have not been amended.

The claims as set out in the Appendix are the claims as currently pending.

V. Summary of Invention

This invention relates to a furnace-type atomic absorption spectrophotometer. A sample is heated inside a tube, and a heating control means digitally controls a heating current for heating the tube such that the monitored value of its temperature will approach a specified target temperature value. Parameters that determine response characteristics of this heating control means are set by a parameter setting means that adjusts the parameters according to kinds of elements to be detected and thereby controls indicial response characteristics of the heating control means in units of milliseconds when the tube is heated by the heating control means. The

heating control means includes a calculator for digitally obtaining a quantity of a specified operation of the heating control means by a PID control calculation on difference between the monitored value and the target temperature value. The parameter setting means serves to set at least one of parameters for the PID control calculation.

VI. Issues

In aforementioned final office action dated August 13, 2004 (hereinafter simply "the Final Office Action"), the examiner rejected claims 12, 13, 15 and 16 under 103 over Egan in view of Pettit and Okumoto. The examiner admitted in said Final Office Action (1) that Egan and Pettit disclose controlling indicial response characteristics of a heating control means operating in units of seconds (in Paragraph 3) and (2) that the combined teachings of Egan and Pettit lack the parameter setting means setting parameters that determine response characteristics of the heating control means, the parameter setting adjusting the parameters according to kinds of elements to be detected (in Paragraph 6 on page 5 at lines 5-9). The examiner argued thereafter in said Final Office Action that Okumoto disclosed different heating programs being stored and utilized by a spectrophotometer based on the element or combination of elements to be detected and analyzed (in Paragraph 6 on page 5 at lines 9-14). Regarding the response characteristics of the heating control means operating, the examiner stated as follows (verbatim): "Since, 1 second is equivalent to 1000 milliseconds, one skilled in the art would recognize that the heating control means may operate and display units of milliseconds, e.g. instead of operating and displaying 10 second, it would operate and display 10000 milliseconds."

ISSUE: DO THE CITED REFERENCES PROPERLY DISCLOSE ANY MEANS FOR CONTROLLING INDICIAL RESPONSE CHARACTERISTICS OF A HEATING CONTROL MEANS IN UNITS OF MILLISECONDS AS REQUIRED IN CLAIM 12?

VII. Grouping of Claims

It is Applicant's intention that all claims 12, 13, 15 and 16 stand or fall together, as far as the reasons of rejection stated in the Final Office Action are concerned.

VIII. Arguments

ISSUE: DO THE CITED REFERENCES PROPERLY DISCLOSE ANY MEANS FOR CONTROLLING INDICIAL RESPONSE CHARACTERISTICS OF A HEATING CONTROL MEANS IN UNITS OF MILLISECONDS AS REQUIRED IN CLAIM 12?

One of the inventive elements in independent claim 12 is described as follows:

parameter setting means for setting parameters that determine response characteristics of said heating control means, said parameter setting means adjusting said parameters according to kinds of elements to be detected and thereby controlling indicial response characteristics of said heating control means in units of milliseconds when said tube is heated by said heating control means.

In other words, the examiner's rejection of this independent claim and all the other claims dependent therefrom should be reversed if none of the cited references describes or at least hints at such parameter setting means having the functions as described above. One of the functions to be noted that must be provided to this parameter setting means is that of "controlling indicial response characteristics of said heating control means in units of milliseconds when said tube is heated by said heating control means" but the examiner did not offer any argument in Paragraph 6 of said Final Office Action that any of the cited references described or even hinted at such function. The only statement by the examiner found in said Final Office Action related to the control of indicial response characteristic of a heat control means in whatever unit is the sentence in page 3 at lines 1-4 which is cited verbatim as follows:

Since, 1 second is equivalent to 1000 milliseconds, one skilled in the art would recognize that the heating control means may operate and display units of milliseconds, e.g. instead of operating and displaying 10 second, it would operate and display 10000 milliseconds.

Thus, the examiner's argument is essentially that a control in units of milliseconds is an obvious extension of a control in units of seconds (because 1 second equals 1000 milliseconds).

Applicant-appellant herein argues that a control in units of milliseconds is not an obvious extension of a control in units of seconds and requests that this be so held.

As explained above, this invention relates to a furnace-type atomic absorption spectrophotometer. This difference of three orders of magnitude (between a second and a millisecond) is particularly important within the framework of furnace-type atomic absorption spectrometer because it is the time of atomization that is particularly important. The atomization process usually ends in about one second (while the temperature program is usually set for 2-3 seconds). In view of this time of atomization, it is clear that a control in units of seconds is of little use. It is only because a control is in units of milliseconds according to this invention that an optimum temperature rise characteristic (response characteristic) can be obtained. It is not a mere matter of any three orders of magnitude.

Rejection of independent claim 12 as well as dependent claims 13, 15 and 16 dependent therefrom should be reversed.

Respectfully submitted,

Dated: October 21, 2004



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IX. Appendix of Claims Involved in the Appeal

12. A furnace-type atomic absorption spectrophotometer comprising:
a tube for heating a sample therein;
monitoring means for monitoring temperature of said tube and outputting a monitored value indicative of the monitored temperature;
heating control means for digitally controlling heating current for heating said tube such that said monitored value will approach a specified target temperature value; and
parameter setting means for setting parameters that determine response characteristics of said heating control means, said parameter setting means adjusting said parameters according to kinds of elements to be detected and thereby controlling indicial response characteristics of said heating control means in units of milliseconds when said tube is heated by said heating control means;
wherein said heating control means includes a calculator for digitally obtaining a quantity of a specified operation of said heating control means by a PID control calculation on difference between said monitored value and said target temperature value and said parameter setting means serves to set at least one of parameters for said PID control calculation.
13. The spectrometer of claim 12 wherein said indicial response characteristics include characteristics at a time of raising temperature.
15. The spectrophotometer of claim 12 wherein said PID control is carried out with a proportional parameter, an integration parameter and a differential parameter.
16. The spectrophotometer of claim 12 wherein said monitoring means monitors values indicative of the temperature of said tube.